### (19) World Intellectual Property Organization

International Bureau





(43) International Publication Date 12 February 2004 (12.02.2004)

PCT

# (10) International Publication Number WO 2004/012583 A3

(51) International Patent Classification<sup>7</sup>: A61B 19/00

(21) International Application Number:

PCT/US2003/024367

(22) International Filing Date: 1 August 2003 (01.08.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

60/400,151 1 August 2002 (01.08.2002) U

(71) Applicant (for all designated States except US): THE GENERAL HOSPITAL CORPORATION [US/US]; 32 Fruit Street, Boston, MA 02114 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): LEVINE, Robert, A. [US/US]; 60 Longwood Avenue, #1010, Brookline, MA 02446 (US). MESSAS, Emmanuel [FR/FR]; 9 ter rue de Boulainvilliers, F-75016 Paris (FR). (74) Agents: COHEN, Jerry et al.; Perkins, Smith & Cohen, LLP, One Beacon Street, Boston, MA 02108 (US).

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

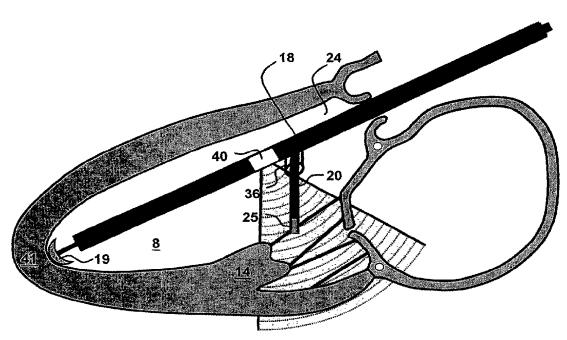
(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

#### Published:

with international search report

[Continued on next page]

(54) Title: CARDIAC DEVICES AND METHODS FOR MINIMALLY INVASIVE REPAIR OF ISCHEMIC MITRAL REGURGITATION



(57) Abstract: Novel apparatus and minimally invasive methods to treat atrioventricular valve regurgitation that is a result of tethering of chordae attaching atrioventricular valve leaflets to muscles of the heart, such as papillary muscles and muscles in the heart wall, thereby restricting the closure of the leaflets. Catheter embodiments for delivering and positioning chordal severing and elongating instruments are described.

# WO 2004/012583 A3



 before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

 $\textbf{(88)} \ \ \textbf{Date of publication of the international search report:}$ 

6 May 2004

## INTERNATIONAL SEARCH REPORT

International application No.

		PC1/US03/2436/	
A. CLASSIFICATION OF SUBJECT MATTER			
IPC(7) : A61B 19/00			
US CL : 128/898; 606/001			
According to International Patent Classification (IPC) or to both national classification and IPC			
B. FIELDS SEARCHED			
Minimum documentation searched (classification system followed by classification symbols)			
U.S.: 128/898; 606/001			
0.07 1.125/050, 000/001			
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched			
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)			
Carried Carrie			
C. DOCUMENTS CONSIDERED TO BE RELEVANT			
Category *	Citation of document, with indication, where a	ppropriate, of the relevant passages Relevant to claim No.	
A,P	US2003/0120341 A1 (Shennib et al) 26 June 2003 (2		
,-	(2.2000) (2.2000)	solution and administration administration and administration administration and administration administrat	
Α	US 2002/0013571 A1 (Goldfarb et al) 31 January 2002 (31.01.2002), See entire document.		
11	Ob 2002/00/13371 M1 (Goldlato et al) 31 January 2002 (31:01:2002), See Chine document.		
A, E	E US 6,629,534 B1 (St. Goar et al) 07 October 2003 (07.10.2003), See entire document.		
A, L	05 5,029,334 B1 (St. Goal et al) 07 October 2003 (07.10.2003), See entire document.		
Α	US 6,355,030 B1 (Aldrich et al) 12 March 2002 (12.03.2002), See entire document.		
A	03 0,333,030 B1 (Aldrich et al) 12 March 2002 (12.03.2002), See entire document.		
Further	documents are listed in the continuation of Poy C	Con notant family annous	
Further documents are listed in the continuation of Box C.		See patent family annex.	
* Special categories of cited documents: "T		"T" later document published after the international filing date or priority	
"A" document defining the general state of the art which is not considered to be		date and not in conflict with the application but cited to understand the principle or theory underlying the invention	
of particular relevance			
40"!'	direction or natural mublished on an effect the format of the first	"X" document of particular relevance; the claimed invention cannot be	
"E" earlier ap	plication or patent published on or after the international filing date	considered novel or cannot be considered to involve an inventive step when the document is taken alone	
"L" document which may throw doubts on priority claim(s) or which is cited to		when the document is taken divire	
	he publication date of another citation or other special reason (as	"Y" document of particular relevance; the claimed invention cannot be	
		considered to involve an inventive step when the document is combined with one or more other such documents, such combination	
"O" document referring to an oral disclosure, use, exhibition or other means		being obvious to a person skilled in the art	
		·	
	published prior to the international filing date but later than the	"&" document member of the same patent family	
priority date claimed			
Date of the actual completion of the international search		Date of mailing of the international search report	
12 February 2004 (12.02.2004)		9 1 MAD 2004	
12 February 2004 (12.02.2004) Name and mailing address of the ISA/US		Authorized officer //	
_		1 MARIE PURCE PURCE	
Mail Stop PCT, Attn: ISA/US Commissioner for Patents		Linda C. Dvorak	
P.O. Box 1450			
Alexandria, Virginia 22313-1450 Telephone No. (703) 308-0858			
Facsimile No. (703) 305-3230			